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investigations on similar bodies made by Thugutt¹ in Dorpat. The author recounts the results of his experiments of digesting certain compounds with water and various chemicals for a long time at a high temperature, and describes minutely the products formed. By using the proper ingredients a series of sodalites was produced, in which sodium silicate, the corresponding selenite, sulphite, chlorate and other salts take the place of the chloride in the most common sodalite. The details of the experiments cannot be given, although they are extremely interesting. The formula thought to represent best the chemical properties of natural sodalite is $4(\text{Na}_2\text{O}, \text{Al}_2\text{O}_3, 2\text{SiO}_2) + 2 \text{Na Cl}$. The treatment of corundum, a few silicates and natural glasses with water and alkaline carbonates shows clearly that each reagent is efficient in hydrating the substances upon which it acts. Many other conclusions of interest are reached through the author's investigations, but they cannot be mentioned here for lack of space.

BOTANY.

Myriostoma coliforme Dicks. in Florida.—A note upon the rare occurrence of *Geaster coliformis* may be seen in the ninth volume of Grevillia. It was found in England and first recorded in Ray's Synopsis in 1724; with long intervals it has been seen a few times since. It has been met with in a few localities on the continent. When I wrote the article on N. A. Geasters in THE AMERICAN NATURALIST in 1884, I was not aware that *Myriostoma coliforme* had ever been found in this country, but that paper brought out the fact that a specimen which came from Colorado was in the N. Y. State Museum of Natural History. This I noticed in the Journal of Mycology, Vol. I, No. 1.

Last summer Prof. L. M. Underwood found a nest of this rare and curious fungus in the vicinity of Eldorado, Fla. Through his kind consideration and liberality, I have come into possession of three specimens.

As no account of the internal structure has ever been given, I was eager to examine its interior and proceeded shortly to carve the largest specimen. A study of this enables me to fortify the opinion of Desvaux that this interesting species of the tribe *Geaster* should of itself constitute an independent genus. But let us examine it carefully beginning with the mycelium and the external surface.

¹Mineralchemische Studien, Dorpat, 1891, p. 128.

Contrary to my surmise from the published description, the peridium is not invested with a thin frail cuticle emitting from all points of the surface slender filaments which bind it to the soil, as in *Geaster limbatus*, but a fibrous rooting mycelium proceeds from the lowest central point of the base, as in *Geaster succatus*; hence the cuticle is persistent. A stout fibrillose layer succeeds forming the main structure of the plant and connecting with the inner peridium at the base by the numerous pedicels. These are angular or prismatic in shape, sometimes rather flattened and just about 2 mm. in length. A thin fleshy layer lines the inner surface, which is not at all hygrometric as in *Astræus*. The inner peridium is depressed-globose and has the silver-gray lustre mentioned by the old botanists; the surface also is roughened with minute pointed warts, as noticed by Plowright, and this fact leads me to infer that the inner and outer peridium are at first united by what De Bary terms a *split-layer*, as is the case in *Astræus hygrometricus*.

Now as to the internal structure. There is no columella such as we find in all true Geasters. The inner peridium has a soft fleecy lining of fine slender threads, in the dry state much curled and entangled. By careful manipulation, I found each thread to be a long simple structure, brownish in color by transmitted light, 3-4 μ in thickness in the middle and tapering to a fine point at each extremity; it is attached to the membranous wall by one end and of course is free at the other; so far the agreement of the threads is with those of *Geaster*, but a peculiarity now occurs.

The pedicels fuse at once into the wall of the peridium and are not erected in any way into one or more columellas. Instead the threads of the fleecy lining concentrate at numerous points upon the base, elongate and becomes compacted together forming several irregular branched processes, which attain half the height of the peridium. These processes remind me forcibly of the numerous dendroid columellas which are erected from the base in the Myxomycete, *Reticularia lycoperdon*; indeed the silvery surface of the peridium in the two is altogether similar.

Mingled with the spores, I find numerous *free* threads similar to those which grow upon the inner face of the wall but much shorter; I suspect that these grow upon the trama along with the spores and are left free by deliquescence as in *Bovista*. If this is true it is a unique feature. But I am not able to assert this positively from the mature specimens.

The numerous mouths do not appear to have any correspondence either in number or position to the pedicel. It is doubtful to me whether they are determinate, but they seem rather to be ruptures at thin and weak spots between the warts. At any rate they are not regularly fimbriate as in many of the Geasters, but such a fimbriate appearance as may be seen is due to the protrusion of the threads of the fleecy lining by the emission of the spores.

It is therefore most probable that *Geaster columnatus* Lev. must be included in the species under discussion, and there is hence but this one unique species as yet known in the world.—A. P. MORGAN, Preston, O.

Notes on Ginseng (*Aralia quinquefolia*).—Ginseng root is now dug in large quantities in Canada and exported from Canada to the United States, to supply the demand among the Chinese. In order to prevent its eradication the parliament of Ontario has found it necessary to pass a law prohibiting the digging of it except at certain seasons.

This trade is a revival of one of which formerly existed. In 1715 Père Lafitan, a Jesuit father, who was stationed near Montreal, saw a letter of Père Jartoux, who had seen ginseng in Tartary a few years before and gave a description of it. Père Lafitan, ascertaining that the root was worth its weight in gold at Pekin, and that there was "large money" in it, searched the country, and inquired from the Indians, in order to find it, which he succeeded in doing. A company was formed to export it to China, Japan and Tartary. The price at Quebec was from thirty to forty cents a pound. At first anyone was allowed to sell it, but as its value increased the company exercised its monopoly rights, and in 1751 undertook to exclude all others from the trade. As the demand increased the care exercised in procuring and preparing the root relaxed. It was dug out of season, and imperfectly dried in stove ovens. As a result the value of the export fell off from five hundred thousand livres in 1752 to thirty-three thousand livres in 1754. Canadian ginseng came to have such a bad reputation that the export ceased entirely.

When the trade was at its height it was considered more profitable to dig ginseng than to cultivate the farm, and agriculture was almost entirely neglected. For a time the trade was hardly less important than that in fur.

The revival of the demand has caused great activity in the search for ginseng, especially in the country to the north of Kingston, Ont.,

where it is said to abound. The average wholesale price is one dollar per pound, while it retails at five dollars. In the desire to participate in the large profits made in this trade some curious mistakes have been made. A man who thought he had a rich find in Manitoba, discovered, after buying several tons, that he had not the right article, having probably confused gentian with ginseng.

If the trade is to be preserved care will have to be exercised in digging and preparation. The root does not reach any great size in one season, but takes years to develop.

The Chinese word *genseng* and the Iroquois word *garent-oquem*, the Indian name of the plant both signify "a man's thigh," and have doubtless been applied because of a fancied resemblance of the human body. Upon this coincidence Père Lafitan based an argument that America had once been joined to Asia, and that the inhabitants of the former had migrated from the latter before the continents had become separated at Bering Strait.

Panax fruticosus and *Panax cochleatus*, fragrant aromatics, which grow in the Moluccas, and are used by the native practitioners of India, are plants somewhat akin to ginseng. The native Chinese ginseng is probably another species of the same genus as that found on this continent.—J. JONES BELL, Toronto, Canada.

Popular Botany.—It is a good sign of the increase of biological ideas in connection with botany when one finds such a book as "A Song of Life," which has recently come from the pen of Margaret Warner Morley, and which A. C. McClurg has brought out in such an attractive form. The first chapter only, "Flowers," relates to plants, the others dealing with fishes, frogs, birds, etc., but in spite of its title it discusses flowers less, and plant life, and reproduction more. The illustrations are very good, and most artistically arranged below, above and through the pages of poetically worded, and withal quite exact text. We hope to see more of such books.

Jane Newell's "Flowers and Fruits," recently brought out by Ginn & Co., continues the pleasant and instructive lessons begun a couple of years ago. They are designed "for the use of teachers, or mothers studying with their children." The book will be useful.—CHARLES E. BESSEY.